

U.S. Patent Application No. 10/673,093  
 Amendment dated October 11, 2007  
 Reply to Office Action of July 12, 2007

### REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested. Claims 1 - 11, 13 - 29, 31 - 58, and 60 - 135 are pending in the application. Claims 12, 30 and 59 have been canceled. Claims 41-55 and 61-134 are presently withdrawn from consideration. Claim 135 has been added. Claims 1 - 5, 10, 13, 15, 16, 18, 21, 27 - 29, 31, 32, 35, 39, 40 and 56 have been amended.

Claim 1 has been editorially amended to clarify the "homogeneous interaction parameter" and "heterogeneous interaction parameter" recitations, such as supported at paragraph [0026], and elsewhere in the present application. Claim 2 has been editorially amended to clarify the "interfacial potential property" recitation, such as supported at paragraph [0043], and elsewhere in the present application. Claim 3 has been editorially amended to clarify that the particulate material or matrix is measured with respect to physical phenomena that "responds to morphology as well as an interfacial potential property of said particulate material or matrix," such as supported at paragraphs [0043] and [0051], and elsewhere in the present application. Claim 4 has been editorially amended to clarify that the recited target value is at least one measure of phenomena selected from the listed group of measuring methods, such as supported at paragraphs [0044], [0048], [0049], [0059] - [0071], and elsewhere in the present application. Claim 5 has been editorially amended to clarify the step of determining the relationship between A) and B), such as supported at paragraphs [0073] and [0075] and elsewhere in the present application. Minor editorial revisions have been made in claims 10 and 15. Claim 13 has been editorially amended to clarify the recitation of a "liquid" absorptometry method, such as supported at paragraphs [0063], [0090], [0091], and elsewhere in the present application. Claim 16 has been editorially amended to clarify wicking rate method, such as supported at paragraphs [0044], [0046], [0048], [0049], [0059] -

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as supported at paragraph [0026], and elsewhere in the present application. Claim 39 has been editorially amended to clarify that the interfacial potential property value is measured as at least one measure of phenomena selected from the listed group of measuring methods, such as supported at paragraphs [0044], [0048], [0049], [0059] - [0071], and elsewhere in the present application. The

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[0071], and elsewhere in the present application. Claim 18 has been editorially amended to clarify the recitation of a yield point method comprising “measuring a degree of flocculation of the particulate material,” such as supported at paragraph [0066], and elsewhere in the present application. Claim 21 has been editorially amended to clarify the recitation of “using an inert gas for gas adsorption analysis,” such as supported at paragraphs [0052] and [0060], and elsewhere in the present application. Claim 23 has been amended to recite more details of the IGC method as supported in paragraph [0069]. Claim 27 has been editorially amended to clarify the “morphological value” recitation, such as supported at paragraph [0045], and elsewhere in the present application. Claim 27 has been editorially amended to clarify the “morphological analysis,” such as supported at paragraphs [0052] and [0060], and elsewhere in the present application. Claim 28 has been editorially amended to clarify the “chemical value” recitation, such as supported at paragraphs [0055] - [0056], and elsewhere in the present application. Claim 29 incorporates the recitations of original claim 30 and also adds clarifications on the “performance property” recited in original claim 30 and now added to claim 29, such as supported at paragraph [0075], and elsewhere in the present application. Claim 31 has been editorially amended to clarify how the interfacial potential property value of the matrix can be derived, such as supported at paragraph [0075], and elsewhere in the present application. Claims 32 and 35 have been editorially amended to clarify the “surrogate matrix” recitation, such as supported at paragraph [0081], and elsewhere in the present application. Claim 35 also has been editorially amended to clarify the “homogeneous interaction parameter” and “heterogeneous interaction parameter” recitations, such as supported at paragraph [0026], and elsewhere in the present application. Claim 39 has been editorially amended to clarify that the interfacial potential property value is measured as at least one measure of phenomena selected from the listed group of measuring methods, such as supported at paragraphs [0044], [0048], [0049], [0059] - [0071], and elsewhere in the present application. The

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dependency of claim 40 has been corrected to claim 39. New claim 135 is supported by the subject matter in paragraph [0051], and at paragraph [0026], and elsewhere in the present application. Claim 56 also has been editorially amended to clarify the "homogeneous interaction parameter" and "heterogeneous interaction parameter" recitations, such as supported at paragraph [0026], and also incorporates the recitations of its dependent claim 59 (now canceled). No new matter is introduced.

**Rejection of claims 1-40 and 56-60 under 35 U.S.C. §112, second paragraph, for indefiniteness**

At pages 2-3 of the Office Action, claims 1-40 and 56-60 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

For the reasons explained below, the applicants respectfully submit that claims 1-40 and 56-60 define the subject matter which they regard as their invention with a reasonable degree of precision and particularity sufficient for purposes of complying with the requirements of 35 U.S.C. §112, second paragraph. Those skilled in the art can ascertain whether a particular embodiment would, or would not be, within the scope of any of claims 1, 3-5, and 7-25.

Regarding claims 1-3, the Examiner alleges that they are confusing as to what parameters are intended by "homogeneous" and "heterogeneous," and indicates that claims 2-3 give the same descriptions to both "homogeneous" and "heterogeneous" parameters. The applicants respectfully traverse.

Claims 1, 2 and 3 recite one or both of "homogeneous interaction parameter" and "heterogeneous interaction parameter" features. The "homogeneous" and "heterogeneous" terms are not used in isolation. The present application, and amended claims, provides clear and

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definite definitions for the terms "homogeneous interaction parameter" and "heterogeneous interaction parameter."

The applicants point out that breadth is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). Nor is a claim read in a vacuum; it must be read in light of the corresponding specification. According to M.P.E.P. §2173.04, if the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. §112, second paragraph. The scope of the subject matter of claims 1, 2 and 3 is clear in view of the corresponding specification teachings.

In view of at least the above, Applicants submit that claims 1, 2, and 3 set forth what applicants' regard as their invention with a reasonable degree of precision and particularity for compliance with 35 U.S.C. §112, second paragraph, and, therefore, this rejection should be withdrawn.

Regarding claim 4, the Examiner alleges it also is not clear how the candidate of a particulate material is selected, and that claim 4 is confusing because the basis of the selection is never described. The applicants respectfully traverse.

As explained in the present application (*e.g.*, [0027] and [0030]) and recited in claim 4, as amended, the "selected candidate particulate material" is a material having an interfacial potential property value, value derived from an interfacial potential property value, component of an interfacial potential property value, or combinations thereof which results in a target value, such as acquired by one or more of the measuring methods listed in the amended claim. Amended claim 4 clearly recites how the candidate material is selected. The applicants respectfully request reconsideration and withdrawal of this rejection.

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Regarding claim 5, the Examiner alleges that it never describes how or what is the relationship. The applicants respectfully traverse.

Claim 5, as amended, provides additional clarifications on how and what is the relationship to define the subject matter which the applicants regard as their invention with a reasonable degree of precision and particularity sufficient for purposes of complying with the requirements of 35 U.S.C. §112, second paragraph. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 10-12, the Examiner alleges that the claims are confusing on how the matrix could be a solvent, and additionally that claim 10 is confusing as to what is the other particulate material.

Claim 10 has been amended to clarify that a "different" particulate material is recited, and claim 12 has been cancelled. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claim 13, the Examiner alleges that it is not clear what absorptometry methods are intended.

Claim 13 has been amended so that "liquid" absorptometry methods are recited in further detail. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 16-17, the Examiner alleges that these claims are not clear as to what is intended by a wicking rate method and how the claimed organic compounds are used in such a method.

Claim 16 has been amended to clarify that a wicking rate method comprises "comparing the wicking rate of two or more different liquids in a particulate packed column." The applicants respectfully request reconsideration and withdrawal of this rejection.

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Regarding claims 18-20, the Examiner alleges that they are not clear as to what is intended by a yield point method and how the claimed hydrocarbons are used in such a method.

Claim 18 has been amended to clarify that a yield point method comprises "measuring a degree of flocculation of the particulate material." The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 21-22, the Examiner alleges that they are not clear as to what is intended by an interfacial potential vapor absorption method and how the claimed organic compounds are used in such a method.

Claim 21 has been amended to further clarify that an interfacial potential vapor adsorption method comprises "using an inert gas for gas adsorption analysis." The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 23-24, the Examiner alleges that they are not clear as to what is intended by an IGC method and how the claimed organic compounds are used in such a method.

Claim 23 has been amended to clarify that an IGC method comprises "measuring retention time of a gas probe flowing through a packed bed of particulate material." The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claim 25, the Examiner alleges that it is not clear as to how the listed performance properties would be measured/quantified when selected.

Claims are read in light of the specification as those teachings would be read by one skilled in the art. The present specification provides descriptions on how to use measurements of conductivity, dispersability, impact strength, color, reinforcement, powder flow, tribocharging and rheology in the practice of the invention, and one skilled in the art would know how to make the measurements for these individual properties (*e.g.*, [0073] *et seq.*). Again, what is done with

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the measurements forms part of the invention, and not merely the taking of the measurement *per se*. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claim 26, the Examiner alleges that it is not clear what magnitude of "differences" yields the claimed relationships.

Applicants disagree. Claim 26, reciting the relationship of claim 1, is the difference between the work of cohesion for the particulate material and the work of adhesion for the particulate material and the matrix, and is sufficiently clear to one skilled in the art when read in light of the corresponding teachings of the present specification. The specification provides numerous descriptions on what is meant by the "work of adhesion" and "work of cohesion" and how these parameters are used in embodiments of the present invention (e.g., [0025], [0026], [0043], [0062], [0101], [0103], [0107], [0109], [0111], and [0113]). The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claim 27, the Examiner alleges that it is not clear as to what is the morphological value.

Claim 27 has been amended to clarify that the method further comprises the step of selecting the candidate particulate material based on at least one morphological value of the particulate material "selected from the group consisting of shape, size, and structure." The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claim 28, the Examiner alleges that it is not clear as to how the particular material is selected and based upon what type of chemical value.

Claim 28 has been amended to clarify that the method further comprises the step of selecting the candidate particulate material based on at least one chemical value of the particulate material "selected from at least one of the group consisting of overall composition, surface

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composition, and extractable materials.” The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 29-31, the Examiner alleges that it is not clear as to how the interfacial potential property value is determined/derived.

Claim 29 has been amended to add clarifications on the “performance property” recited in original claim 30 and now added to claim 29, such as supported at paragraph [0075], and elsewhere in the present application. Claim 31 has been editorially amended to clarify how the interfacial potential property value of the matrix can be derived, such as supported at paragraph [0075], and elsewhere in the present application. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 32-34, the Examiner alleges that it is not clear as to what is intended by a surrogate matrix, how the surrogate matrix is determined and what/how further manipulations of the surrogate matrix are made.

Claim 32 has been amended to clarify that the surrogate matrix comprises a “chemically related formulation of a customer’s exact formulation, as described in the specification (*e.g.*, [0081]). The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 35-38, the Examiner alleges that it is not clear as to how the candidate is selected, what is the performance property, what and how the surrogate matrix is selected and what are the “homogenous” and “heterogeneous” parameters.

Claim 35, like claim 32, has been amended to clarify that the surrogate matrix comprises a “chemically related formulation of a customer’s exact formulation.” Further, claim 35, like claim 1, also has been editorially amended to clarify the “homogeneous interaction parameter” and “heterogeneous interaction parameter” recitations, such as supported at paragraph [0026], and



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elsewhere in the present application. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 39-40, the Examiner alleges that it is not clear as to how the interfacial potential properties values are determined, and, additionally, claim 40 includes a typographical error by reference to "claim 29," the PTO is assuming the applicants intended the claim to depend from "claim 39."

Claim 39, as amended, clarifies how the interfacial potential property value is measured by at least one of the measuring methods listed in the amended claim. The dependency of claim 40 has been corrected in the manner suggested in the Office Action. The applicants respectfully request reconsideration and withdrawal of this rejection.

Regarding claims 56-60, the Examiner alleges that it is not clear as to how the matrix is selected, what is the matrix, how the parameters are manipulated and what are the interaction parameters.

Claim 56 also has been editorially amended to clarify the "homogeneous interaction parameter" and "heterogeneous interaction parameter" recitations, and also incorporates the recitations of its dependent claim 59 (now canceled), which clarify how the selected candidate matrix is selected. The amended claim is clear and definite. The applicants respectfully request reconsideration and withdrawal of this rejection.

In view of at least the above, reconsideration and withdrawal of the indefiniteness rejection made against claims 1 - 40 and 56 - 60 is respectfully requested.

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**Rejection of claims 1-40 and 56-60 under 35 U.S.C. §102(b) over Webster et al., U.S. Pat. No. 3,229,507, Barkalow et al., U.S. Pat. No. 5,405,623, or Shtarkman et al., U.S. Pat. No. 4,992,190**

At page 4 of the Office Action, claims 1-40 and 56-60 were rejected under 35 U.S.C. §102(b) as being anticipated by Webster et al., U.S. Pat. No. 3,229,507, Barkalow et al., U.S. Pat. No. 5,405,623, or Shtarkman et al., U.S. Pat. No. 4,992,190.<sup>1</sup>

The Examiner alleged that, in light of the above-noted Section 112, first and second paragraph issues, the invention is best understood as a method of determining a particulate in a polymer matrix.

The Examiner indicates that Barkalow et al. teaches a method for monitoring the amount of sorbitol in a polymer matrix (e.g. chewing gum). Shtarkman teaches magnetized particles in a silica gel dispersant and a vehicle. The Examiner indicates that Webster et al. teaches a method of determining the properties of carbon black. This rejection is respectfully traversed.

As explained in the present specification, in one embodiment, the present invention relates to a method and system which allows one to select a candidate particulate material for a composition and preferably provide improved or optimized performance properties in the composition. The present invention makes use of the interfacial potential of the particulate material either alone or in combination with the interfacial potential of the matrix in which the particulate material is used. Thus, the present invention includes the use of at least one homogeneous interaction parameter for the particulate material (for example, the work of cohesion of a particulate material) or at least one homogeneous interaction parameter for the particulate material in combination with at least one heterogeneous interaction parameter for the particulate material and the matrix (for example, the work of cohesion and the work of

<sup>1</sup> Webster et al. is the same reference listed as "Sljaka et al." in the applicants' Information Disclosure Statement filed March 7, 2005 and also was cited in the separately listed International Search Report and Written Opinion dated 10/19/04 ("Opie Jr Webster H et al.").

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adhesion). In the past, the means for selecting a particulate material for use in a composition to achieve a desired performance was based on the morphology of the particulate material and/or the chemistry of the particulate material. Even knowing these parameters, selecting a particulate material for incorporation in a composition to achieve a desired performance still resulted in some unpredictability and involved a certain amount of guess work. Until now, the industry was not entirely clear why the product would not perform consistently even though it was within morphological specifications. The present invention now makes it possible to select particulate materials based on at least one homogeneous interaction parameter for the particulate material, either alone or in combination with at least one heterogeneous interaction parameter for the particulate material and the matrix which enables a customer to more readily achieve the desired performance of their product. In this way, the customer is provided with a product that should perform consistently and optimally in their end product. The present invention also provides a way to better select types, grades, and/or brands of particulate material. This system permits the manufacturers and customers to better select types, grades, and/or brands of particulate materials and permits those in the industry to select more accurately the types, grades, and/or brands of particulate materials.

With respect to Barkalow et al., the applicants point out that Barkalow et al. relates to a method for choosing a sorbitol component for chewing gum compositions wherein the particle size distribution and crystal shape of the sorbitol is selected to control the firmness/softness of the chewing gum during processing (col. 2, lines 11-44; col. 7, line 16 to col. 8, line 42). Barkalow et al. only shows selecting sorbitol based on *morphological* considerations, and, therefore, is not relevant to the present invention. For example, particle size distribution and particle crystal shape are conventional morphological features of particles, and would not shed

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light on a *homogenous interaction parameter* or an *interfacial potential property* value of the particulate material as those terms is defined in the present application. Barkalow et al. fails to teach a method taught to assure product consistency in the manner presently claimed. In particular, Barkalow et al. does not teach or suggest a method of selecting a candidate particulate material based on a predetermined relationship between a performance property of the composition and at least one homogeneous interaction parameter for the particulate material or at least one homogeneous interaction parameter for the particulate material and at least one heterogeneous interaction parameter for the particulate material and the matrix.

Thus, Barkalow et al. does not teach or suggest present independent claims 1, 35, or 56. The claims depending from claims 1, 35, and 56 differ from Barkalow et al. for at least the same reasons as their respective parent claim 1.

With respect to Shtarkman et al., the applicants point out that Shtarkman et al. relates to using a silica gel as a dispersant for small particles of carbonyl iron or other magnetizable particulate to thicken the liquid vehicle and impede settling of the particles (col. 5, line 61 to col. 6, line 28). Shtarkman et al. is using a dispersant (silica gel) to affect the rheological properties of the rheological fluid composition, and is not concerned with selecting a candidate particulate material in any manner even remotely resembling the present invention. Shtarkman et al. fails to teach a method to assure product consistency in the manner presently claimed. In particular, Shtarkman et al. does not teach or suggest a method of selecting a candidate particulate material based on a predetermined relationship between a performance property of the composition and at least one homogeneous interaction parameter for the particulate material or at least one homogeneous interaction parameter for the particulate material and at least one heterogeneous interaction parameter for the particulate material and the matrix.

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Thus, Shtarkman et al. does not teach or suggest present independent claims 1, 35, or 56. The claims depending from claims 1, 35, and 56 differ from Shtarkman et al. for at least the same reasons as their respective parent claim 1.

With respect to "Webster et al.," the applicants point out that Webster et al. teaches a method for determining the oil absorption capacity of carbon black. The torque is measured as a liquid (oil) and is added to the test sample and the results are plotted as torque versus time (columns 3-4, Fig. 3). Webster et al. merely describes prior practices for determining oil absorption of carbon black, but there is no method taught to assure product consistency in the manner presently claimed. In particular, Webster et al. does not teach or suggest a method of selecting a candidate particulate material based on a predetermined relationship between a performance property of the composition and at least one homogeneous interaction parameter for the particulate material or at least one homogeneous interaction parameter for the particulate material and at least one heterogeneous interaction parameter for the particulate material and the matrix.

Thus, Webster et al. does not teach or suggest present independent claims 1, 35, or 56. The claims depending from claims 1, 35, and 56 differ from Webster et al. for at least the same reasons as their respective parent claim 1.

Reconsideration and withdrawal of the rejection is requested.

#### **Restriction Requirement**

At page 4 of the Office Action, the applicants' election with traverse of Group I in their previous reply of April 24, 2007 is acknowledged. The Examiner states that that the applicants' traversal on the grounds that there would be no burden of search is not persuasive because the

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basis for making a restriction requirement is if there are more than one independent and distinct inventions, and that such was demonstrated in the restriction requirement of April 4, 2007. The Examiner indicates that the restriction requirement is still deemed proper and has made it final. The applicants continue to disagree with this restriction requirement, and preserve their right to petition the requirement pursuant to 37 C.F.R. §1.144.

### **Information Disclosure Statements**

At pages 4-5 of the Office Action, the Examiner acknowledges receipt of the multiple Information Disclosure Statements, and cites *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, *aff'd* 479 F.2d 1338.<sup>2</sup> The Examiner indicates that these references have been considered in the same manner as references encountered during a normal search of Office search files.

### **CONCLUSION**

In view of the foregoing remarks, the applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

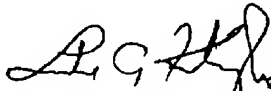
If there are any fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

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<sup>2</sup> *Cf.*, *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1184, 33 USPQ2d 1823 (Fed. Cir. 1995); 37 C.F.R. §1.56 (a) requires, *inter alia*: 'Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section.'

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